

Device Therapy - Implantable Cardioverter Defibrillator (ICD)

Slow VT treatment in a contemporary population of primary prevention ICD recipients

Angeletti A.; Ziacchi M.; Martignani C.; Massaro M.; Statuto G.; Sorrentino S.; Piemontese GP.; Capobianco C.; Spadotto A.; Minguzzi A.; Diemberger I.; Biffi M.

Azienda Ospedaliero, Universitaria di Bologna, Policlinico S.Orsola-Malpighi, Bologna, Italy

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Background: Implantable cardioverter defibrillator (ICD) is an effective therapy for sudden cardiac death (SCD). 2015 HRS/EHRA/APHRS/SOLAECE expert consensus document suggests long VT detection, above 185 bpm, as optimal ICD programming to reduce unnecessary therapies in primary prevention (PP).

Purpose: The aim of our study is to evaluate incidence, safety and efficacy of ICD treatment for VT arrhythmias below 185 bpm, in a contemporary population of PP ICD recipients with long detection intervals (LDI), morphological discrimination algorithm and antitachycardia pacing therapies (ATP) before shock.

Methods: We conducted a single centre retrospective study enrolling 236 patients implanted with a primary-prevention indication from January 2013 to June 2019. Patients were implanted with single or dual chamber single-lead transvenous ICD. All patients had standard device setting with long (at least 20 s in VT and 7 s in VF) VT/VF detection above 150 bpm and therapies starting from 171 with up to 5 ATP and multiple shocks. PainFREE-like bursts and Schaumann-like ramps ATP were always set in VT zone. Of each patient we collected a detailed report of up to five appropriate events and three inappropriate events. Arrhythmia diagnosis was confirmed from 3 independent expert physicians. Date of the event, cycle length, type of morphology (polymorphic or monomorphic), therapies with their effect were collected.

Results: During a mean follow-up of 42 months, 47 (20 %) and 18 (8%) patients had at least one appropriate and inappropriate activation, respectively. The detailed-events analysis shows that 16 (7%) patients had 38 (30%) appropriate events with rate <188 bpm. At these rate ATP were 97% effective. 14 (38%) of inappropriate activations were caused by arrhythmias with ventricular rate below 188 bpm and half of these received a shock; 30% of inappropriate shocks were due to arrhythmia with rate <188 bpm. 73% of treated events, with rate <188 bpm, were appropriate. Only 5.6% (n = 10) of ATP attempts cause arrhythmia acceleration.

Conclusions: One third of detected arrhythmias had a rate below 188 bpm and 73% were true VT. In this slow VT zone, ATP had a high success rate with low percentage of acceleration.